

SELECTION OF TURFGRASS SPECIES AND VARIETIES

**James A. Murphy
Rutgers University
New Brunswick, New Jersey**

One of the most crucial decisions made during the establishment of a turf is the proper selection of seed or seed mixtures. Turfgrasses must be selected according to their adaptation to the particular site and intended use. Improper seed selection and/or poor seed quality will lead to poor turf. Use of a turfgrass species or variety that is not adapted to your site conditions will result in a weak, thin, and unattractive turf that is subject to soil erosion and weed encroachment. Consequently, a higher level of maintenance will be necessary to maintain a desirable lawn.

The selection of adapted cultivars and mixtures of turfgrasses is an important first step but does not guarantee long term success. In addition to adequate preparation of the seedbed, all lawns require proper maintenance (mowing, watering, fertilization, liming, dethatching, and aeration) in order to maintain turf vigor and reduce the level of stress and pest problems. Even resistant turfgrasses can become susceptible to disease and insect problems under poor management conditions such as close mowing, shallow or excessive irrigation, poor drainage, soil compaction, excessive thatch accumulation, and improper applications of fertilizers, lime, growth regulators, and pesticides.

Generally, the best time to seed cool season grasses is late summer or early fall. Spring seeding can also be successful, however, preemergence herbicides may be required to control annual weeds (especially crabgrass).

Suggested Seed And Seed Mixtures

Kentucky bluegrass, fine fescues, perennial ryegrass, and tall fescue are the more traditional species recommended for lawn grasses. Your local Cooperative Extension programs should be able to provide some additional information on suggested cool-season turfgrass seed and seed mixtures for use in your region. Procedures and suggestions to establish or renovate your turf should also be available from your local Cooperative Extension office.

When using a seed blend or mixture, in order to provide enough diversity, three to five unrelated cultivars should be used if possible. This is especially true if Kentucky bluegrass is a component because essentially all of the seeds of a Kentucky bluegrass variety produce genetically identical plants. Using three to five cultivars increases diversity and improves the overall resistance to diseases and tolerance to other pest and environmental stresses.

Kentucky Bluegrass

Kentucky bluegrass is comprised of many genotypes that express a wide range of characteristics. It is beneficial to separate these genotypes into groups based on specific characteristics to more readily identify those cultivars that possess the characteristics useful to area of intended use. Kentucky bluegrass can be grouped into three broad categories as listed below.

Category I.	Elite turf-type
Category II.	BVMG type
Category III.	Midwest Ecotype

Category I contains a large number of cultivars that can form an attractive durable turfgrass. This category can be separated further into subgroups based on more specific characteristics.

- A. Compact Types
- B. Bellevue Types
- C. Mid-Atlantic Ecotypes
- D. Julia Types
- E. Aggressive Types
- F. Others

Compact types have long winter dormancy, slow spring greenup, and a compact dense low growing turf. Most have good leafspot resistance and a dark green color. These cultivars are often the most attractive turfs during May and early June.

Cultivars classified as Bellevue types have similar turf performance, although some morphological and laboratory characteristics differ. These varieties have good color retention in late fall, early spring green-up, and are free of purple color during winter. They form a turf of medium low growth, medium wide leaves, and a medium density. Resistance to leaf spot, leaf rust and stem rust diseases is good. Moderately good resistance to dollar spot, summer patch, and stripe smut diseases is observed in the Bellevue type cultivars. These cultivars are moderately susceptible to billbugs.

Mid-Atlantic ecotypes have deep, long, spreading rhizomes and perform well as a medium maintenance turf with good early spring color. Mid-Atlantic ecotype cultivars tolerate heat and drought, and are adapted to a medium high mowing height. These cultivars are moderately susceptible to leaf spot disease but exhibit good recovery from leaf spot damage. These cultivars generally have moderate to good tolerance to billbugs.

Julia types represent a small group of cultivars which have good resistance to leaf spot but are susceptible to dollar spot disease.

Aggressive type cultivars frequently dominate a seed blend. Any strengths or weaknesses of such varieties will become very important to the ultimate performance of a blend; since it is likely to dominate the other components of a blend. Use of one or more aggressive varieties comprising up to 100% of the blend is acceptable for heavy use turfs such as sports fields; however, this is not recommended for general turf areas that would benefit from a diverse seed blend.

The final subgroup of Category I represents a diverse number of cultivars that are believed to be unrelated. These cultivars often have characteristics that are intermediate between two or more of the above subgroups and are referred to as Other types.

Compact Type	Bellevue Type	Mid-Atlantic Ecotype	Julia Type
Able I	Banff	Eagleton†	Caliber†
Alpine	Classic	Livingston†	Julia
America	Columbia	Monopoly	Ikone
Blacksburg†	Dawn	Plush	
Glade	Freedom	Preakness†	
Indigo	Georgetown	SR 2000†	
Midnight	Haga	Vantage†	
NuBlue	Parade†	Voyager†	
Unique	Rugby	Wabash	
	Suffolk†		
	Trenton†		
Aggressive Type	Other Type	Other Type	Other Type
Limousine			
Mystic†	Adelphi*	Chateau	Lofts 1757†
Princeton 104†	Aspen*	Cheri	Merion
Touchdown	Birka	Coventry	Nassau
Sydsport†	Bristol	Eclipse*	NuStar
Warren's A-34	Challenger*	Liberty*	Ram I
Washington			Shamrock

†, May have limited seed availability.

*, Cultivars in Other subgroup that have early spring color.

Category II refers to an important group of cultivars called BVMG Type. This is an acronym for the cultivars of this group that were first released commercially; 'Baron', 'Victa', 'Merit', and 'Gnome'. This is a widely used group of varieties which forms a medium low growing turf of medium density with medium wide leaves. These cultivars generally exhibit medium resistance to leaf spot, dollar spot, stem rust, and leaf rust diseases, but high susceptibility to a new race of stripe smut disease. Slow recovery from yellow ring disease has been observed. The cultivars 'Cheri' and 'Nassau' are similar in appearance to this group but have better resistance to stripe smut and faster recovery from yellow ring.

Abbey	Gnome	Merit	Viva
Baron	Kelly	Victa	Crest

Category III, Midwest Type, represents a group of cultivars frequently referred to as "common" types. The intended use of these cultivars should be high cut, low maintenance turf such as roadsides and other utility-type turf areas. These cultivars all have fine leaves with upright growth and are susceptible to leaf spot disease. Midwest type cultivars are best adapted to high cut turfs in regions with bright sun, cool nights, and low humidity.

Alene	Huntsville	Park
Arboretum†	Kenblue	South Dakota Certified
Argyle		

† May have limited seed availability.

Diverse Kentucky Bluegrass Seed Blending

Table 1 is intended to serve as guide for blending cultivars from the above categories and subgroups, from the perspective of agronomic performance. The list does not account for the varietal differences in color and texture. It is recommended that one become familiar with the varieties of interest to ensure that the appearance (color and texture) of those varieties would be compatible in a blend.

The seeds of a Kentucky bluegrass cultivar produce genetically identical plants, therefore, in order to provide enough diversity, three to five unrelated cultivars should be used. Using three to five cultivars increases diversity of the seed blend or mixture and improves the overall resistance to diseases and tolerance to other pest and environmental stresses.

Usually, the total content of Aggressive cultivars from Category I should not exceed 15% by weight of the blend. However, higher amounts of Aggressive varieties might be used in sod produced for turfs receiving extensive traffic (wear).

Table 1. Seed blending guidelines for the number and weight (%) of various types of Kentucky bluegrass cultivars.

Group or Subgroup	Number of Cultivars	Percent by Weight
Category I		
Compact	1 or more	single variety 15 to 35%
Bellevue	1	15 to 50%
Mid-Atlantic	no more than 2	total not to exceed 35%
Julia	1	15 to 35%
Aggressive	no more than 2	total not to exceed 15%
Other	1 or more	single variety 15 to 35%
Category II		
BVMG Type	1	up to 25%
Category III (Utility turf only)		
Midwest Type	1 or more	total not to exceed 25%

Fine Fescues

Three major species of the fine fescues are useful where well-drained, acidic soil exists, low fertilization is expected, and a medium level of shade is likely. Use of the following fine fescue species and cultivars is acceptable in a mixture with Kentucky bluegrasses for many general turf areas.

Hard Fescue is a species that forms a dense, fine leaf, moderately low growing turf with a moderately slow rate of establishment. Hard fescues will persist well under low maintenance and frequently dominate Kentucky bluegrass under such conditions. Endophyte infection (E+) of hard fescue provides significant benefit to this low maintenance species.

Attila [†]	Biljart	Reliant	Spartan	Valda [†]
Aurora	EcoStar [†]	Reliant E+	SR 3000	Waldina
Aurora E+	Nordic [†]	Scaldis	SR 3100 [†]	Warwick [†]

Chewings Fescue is a species that forms a fine, dense, moderately low growing turf. Chewings fescue is tolerant of moderately low maintenance. These cultivars tolerate lower mowing and are more compatible in Kentucky bluegrass mixtures than hard fescue. The newer cultivars are more aggressive and can dominate in a mixture.

Banner	Longfellow	Southport [†]
Bridgeport [†]	Proformer [†]	SR 5000
Jamestown II	Shadow	Victory

Strong Creeping Red Fescue is the most compatible species of the fine fescues when mixed with Kentucky bluegrass. Strong creeping red fescues require medium maintenance but are highly susceptible to diseases such as red thread and dollar spot. This species has the greatest seedling vigor of the fine fescues.

Cindy	Jasper	Shademaster
Flyer	Salem [†]	Vista

[†] May have limited seed availability.

Fine Fescue - Kentucky Bluegrass Mixtures

Fine fescue - Kentucky bluegrass seed mixtures should consist of 2 (two) or more Kentucky bluegrasses in combination with 1 (one) or more of the fine fescue cultivars using the following standards (percentage by weight):

1. Sunny Mixture	60-95% Kentucky Bluegrasses:	60-95% Category I 0-25% Category II
	5-40% Fine Fescue:	0-10% Hard 0-10% Chewings 5-40% Strong Creeping Red
2. Shady Mixture	50-75% Fine Fescue:	0-20% Hard 0-20% Chewings 20-65% Strong Creeping Red
	25-50% Kentucky Bluegrass:	25-50% Category I

Under moderate shade conditions the cultivars Able I, America, Bristol, Eclipse, Glade, Ram I, 1757, Touchdown, and Warren's A-34 may exhibit somewhat better shade tolerance than many other Kentucky bluegrass cultivars.

3. Low Maintenance, High Cut, Utility Turf

25% Category I Kentucky Bluegrass (Mid-Atlantic Ecotypes suggested.)	
25% Category III Kentucky Bluegrass	
50% Fine Fescue:	10-30% Hard
	10-30% Chewings
	10-30% Strong Creeping Red

Tall Fescue - Kentucky Bluegrass Mixture

Tall fescue is a species useful for low to moderately high maintenance turfs. The species is adapted to a wide range of soil conditions and has good tolerance of heat and drought stress. Endophyte infection of tall fescue is helpful in maintaining good insect tolerance.

Tall fescue can be grown in a monostand, but is frequently mixed with other species in seed mixtures. A mixture of tall fescue and Kentucky bluegrass will have good recuperative capacity because of the rapid lateral spreading capability of Kentucky bluegrass rhizomes. Mixtures of tall fescue and perennial ryegrass will lack the potential of rapid recovery after extensive turf injury due to the bunch-type growth habit of both species.

Tall fescue - Kentucky bluegrass seed mixtures should consist of 1 (one) or more Kentucky bluegrasses in combination with 2 (two) or more of the turf-type tall fescue cultivars using the following standards (percentage by weight):

85-95% Tall Fescue (turf-types)
5-15% Kentucky Bluegrass

NOTE - Use rust resistant, lower maintenance Kentucky bluegrass cultivars such as the **Bellevue Types; Mid-Atlantic Ecotypes;** and Aspen, Cheri, Ram I, and NuStar.

Amigo*	Duke*	Era*	Mini Mustang**
Austin	Eldorado*	Falcon II*	
Avanti*		Guardian*	
Bonanza		Houndog V*	
Bonanza II*		Hubbard 87*†	
Chieftain		Jaguar II	
Cimarron		Jaguar III*	
Cochise*		Lancer*	
Crewcut**		Maverick II*	
Crossfire*		Mesa	

Monarch*	SR 8200*
Montauk	SR 8300*†
Olympic II	Thoroughbred
Pixie*†	Titan
Rebel II	Tomahawk*†
Rebel Jr.*	Trailblazer II*†
Rebel 3D*†	Tribute
Safari	Virtue*
Shenandoah*	Vegas*
Shortstop*	Winchester
Silverado*†	Wrangler

* Moderately low growing.

** Low growing.

† May have limited seed availability.

Perennial Ryegrass

Recommendations regarding perennial ryegrass or tall fescue specify "turf-types". This distinguishes between the finer-textured grasses developed for high-quality turf use and the coarser-textured, "pasture-type" grasses such as 'Kentucky 31' and 'Fawn' tall fescue and less-persistent perennial ryegrass such as 'Linn' and 'Nui'. The coarse-textured varieties form an open, unattractive turf.

Perennial ryegrass can be useful for many turfs and is commonly used for overseeding damaged turf areas due to its rapid germination and rate of establishment. Perennial ryegrasses are susceptible to many diseases such as red thread, dollar spot, and brown patch when not properly managed. Damage from white grubs can be severe during late summer. Endophyte infection is beneficial for good resistance to some foliar feeding insects. Accept only certified seed to ensure varietal purity.

A perennial ryegrass - Kentucky bluegrass mixture should consist of 2 (two) or more Kentucky bluegrasses in combination with 1 (one) or more of the turf-type perennial ryegrass cultivars using the following standards (percentage by weight):

15-20% Perennial Ryegrass (turf-types)
80-85% Kentucky Bluegrass

Having more than 20% perennial ryegrass in a seed mixture may result in perennial ryegrass dominating the Kentucky bluegrass during establishment.

The following improved turf-type cultivars of perennial ryegrass have performed well in New Jersey turf trials:

Advantage	Dandy*	Navajo*†	Seville*
Advent*†	Delaware Dwarf*	Palmer II*	Sherwood*
Affinity*	Dimension	Pinnacle*	SR 4000*
APM*†	Elf*†	Prelude II*	SR 4100*
Assure*	Envy	Prizm*†	SR 4200*
Birdie II	Gettysburg*	Quickstart*	Top Hat
Brightstar*†	Legacy*	Repell II*	Yorktown III*
Charger	Manhattan II E+*	Saturn*	

* Variety developed to contain high levels of endophyte. Old seed, or poorly stored seed loses endophyte viability before it loses seed viability. Note other varieties may have a moderate level of endophyte.

† May have limited seed availability.